LINALOOL
CASRN: 78-70-6

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Best Sections

Special Reports :
Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (**78**-**70**-**6**) 157 pp. (March 2002).This OECD Initial Assessment of HPV Chemicals is part of a series of OECD SIDS documents published by UNEP Chemicals to facilitate the access to information needed for health and environmental risk assessments of chemicals.

Special Reports :
European Chemicals Bureau; IUCLID Dataset, Linalool (**78**-**70**-**6**) 55 pp. (2000 CD-ROM edition) contains information on use, toxicology, and environmental effects of this chemical as supplied to the European Union by industry.

Ongoing Test Status :
The following link will take the user to the National Toxicology Program (NTP) Test Agent Search Results page, which tabulates all of the "Standard Toxicology & Carcinogenesis Studies", "Developmental Studies", and "Genetic Toxicity Studies" performed with this chemical. Clicking on the "Testing Status" link will take the user to the status (i.e., in review, in progress, in preparation, on test, completed, etc.) and results of all the studies that the NTP has done on this chemical. [http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm?fuseaction=ntpsearch.searchresults&searchterm=78-70-6
[Available from: http://ntp-apps.niehs.nih.gov/ntp_tox/index.cfm?fuseaction=ntpsearch.searchresults&searchterm=78-70-6

Metabolism/Metabolites :
For the induction study 600 mg linalool/kg bw was administered /to male IISc strain rats/ once daily for **6** days by gastric tube as a suspension in 1% methyl cellulose solution. Control rats were only given the vehicle. For the identification of metabolites, 800 mg linalool/kg bw was administered once daily for 20 days ... . 8-Hydroxy-linalool (CAS 64142-**78**-5) and 8-carboxy-linalool (CAS 26187-81-5) were identified in the urine, showing selective oxidation of the C8-methyl in linalool. The 8-hydroxylase present in both lung and liver microsomes was shown to be mediated by a cytochrome P-450 (CYP450) system. After 3 days of dosing, liver and lung microsomal CYP450 was increased; on the other hand, both NADH- and NADPH-cytochrome c reductase

activities were not significantly changed during the 6 days of treatment. /Purity > 99.5%/
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.97 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Methods of Manufacturing :
a) Extraction of linalool is based on fractionation distillation of essential oils of mainly bois de rose, shiu (camphor) or coriander. b) Partial synthesis starts either from alpha- or beta-pinene (CAS 80-56-8 & 127-91-3). alpha-Pinene is hydrated selectively to cis-pinane (6876-13-7) and subsequently oxidised to cis/trans (ca 75%/25%) pinane hydroperoxide (28324-52-9), which is in turn reduced to pinanols (various CAS numbers) and the latter finally pyrolysed to the respective linalools. c) Total chemical synthesis of linalool is by way of 2-methyl-2-hepten-6-one (110-93-0). It may start from addition of acetylene (74-86-2) to acetone (67-64-1) resulting in 3-methyl-1-butyn-3-ol (115-19-5), which is hydrated in the presence of a palladium catalyst to 3-methyl-1-buten-3-ol (115-18-4), which is reacted with either diketene or acetic acid ester to the acetoacetate and the latter thermally reacted to 2-methyl-2-hepten-6-one. Alternatively, 3-methyl-1-buten-3-ol is reacted with isopropenyl methyl ether (116-11-0) to 2-methyl-2-hepten-6-one. In a third synthetic pathway, isoprene hydrochloride is reacted with acetone in the presence of an alkaline condensing agent or in the presence of organic bases as catalysts to 2-methyl-2-hepten-6-one. 2-Methyl-2-hepten-6-one is then reacted with acetylene to dehydrolinalool (CAS 29171-20-8), which is finally partially hydrated using hydrogen gas on a catalyst of platinum on activated charcoal. Subsequently the product linalool is purified through vacuum distillation.
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.38 (March 2002). Available from, as of July 14, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Other Chemical/Physical Properties :
SAPONIFICATION NUMBER: NOT MORE THAN 1.5; SOL 1:4 IN 60% ALC; INDEX OF REFRACTION: 1.4600-1.4630 @ 20 DEG C/D; FLASH POINT: 78 DEG C; BP: 198 DEG C; ASSAY: GREATER THAN 95%; SPECIFIC GRAVITY: 0.858-0.862 @ 25 DEG C; SYNTHETIC LINALOOL EXHIBITS A CLEANER & FRESHER NOTE THAN THE NATURAL PRODUCT /SYNTHETIC/
[Fenaroli's Handbook of Flavor Ingredients. Volume 2. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975., p. 320] **PEER REVIEWED**

Major Uses :
Reported uses (ppm): (Flavor and Extract Manufacturers' Association, 1994)
Reported uses (ppm): (Flavor and Extract Manufacturers' Association, 1994)

Food Category	Usual	Max.
Alcoholic beverages	0.24	0.42
Baked goods	11.90	17.64
Chewing gum	40.74	61.00
Condiments, relishes	5.00	40.00
Frozen dairy	6.47	9.57
Gelatins, puddings	7.31	9.76
Hard candy	3.13	14.89
Meat products	18.72	45.65
Nonalcoholic beverges	3.57	6.87
Soft candy	6.38	10.42

[Burdock, G.A. (ed.). Fenaroli's Handbook of Flavor Ingredients. 5th ed.Boca Raton, FL 2005, p. 1029] **PEER REVIEWED**

Human Toxicity Excerpts :

/HUMAN EXPOSURE STUDIES/ ... During 4 periods of 6 months, from 1 January 2003 to 31 December 2004, 26 fragrances were patch tested additionally to the standard series in a total of 21,325 patients; the number of patients tested with each of the fragrances ranged from 1658 to 4238. Hydroxymethylpentylcyclohexene carboxaldehyde (HMPCC) was tested throughout all periods. The following frequencies of sensitization (rates in %, standardized for sex and age) were observed: tree moss (2.4%), HMPCC (2.3), oak moss (2.0), hydroxycitronellal (1.3), isoeugenol (1.1), cinnamic aldehyde (1.0), farnesol (0.9), cinnamic alcohol (0.6), citral (0.6), citronellol (0.5), geraniol (0.4), eugenol (0.4), coumarin (0.4), lilial (0.3), amyl-cinnamic alcohol (0.3), benzyl cinnamate (0.3), benzyl alcohol (0.3), linalool (0.2), methylheptin carbonate (0.2), amyl-cinnamic aldehyde (0.1), hexyl-cinnamic aldehyde (0.1), limonene (0.1), benzyl salicylate (0.1), gamma-methylionon (0.1), benzyl benzoate (0.0), anisyl alcohol (0.0). 1) Substances with higher sensitization frequencies were characterized by a considerable number of '++/+++' reactions. 2) Substances with low sensitization frequencies were characterized by a high number of doubtful/irritant and a low number of stronger (++/+++) reactions. 3) There are obviously fragrances among the 26 which are, with regard to contact allergy, of great, others of minor, and some of no importance at all.

[Schnuch A et al; Contact Dermatitis 57 (1): 1-10 (2007)] **PEER REVIEWED** PubMed Abstract

Synonyms :

2,6-DIMETHYL-2,7-OCTADIENE-6-OL

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Synonyms :
2,6-Dimethyl-2,7-octadien-6-ol
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Synonyms :
2,6-Dimethylocta-2,7-diene-6-ol
PEER REVIEWED

Synonyms :
2,6-DIMETHYLOCTA-2,7-DIEN-6-OL
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Impurities :
Impurities typical for marketed substance: 3,7-dimethyloct-6-en-3-ol (18479-51-1; < = 1.9% v/v); 3,7-dimethyloct-6-en-1-yn-3-ol (29171-20-8; < 0.1% w/w); linalyl acetate (115-95-7; < 0.5% w/w).
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.34 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

General Manufacturing Information :
NON-ALCOHOLIC BEVERAGES 2.0 PPM; ICE CREAM, ICES...3.6 PPM; CANDY 8.4 PPM; BAKED GOODS 9.6 PPM; GELATINS & PUDDINGS 2.3 PPM; CHEWING GUM 0.80-0.90 PPM; CONDIMENTS 40 PPM.
[Fenaroli's Handbook of Flavor Ingredients. Volume 2. Edited, translated, and revised by T.E. Furia and N. Bellanca. 2nd ed. Cleveland: The Chemical Rubber Co., 1975., p. 320] **PEER REVIEWED**

Human Toxicity Excerpts :
/HUMAN EXPOSURE STUDIES/ The sedative properties and sensory evaluation of R-, S- and RS-linalools were investigated in 20- to 26-year-old adults. The subjects were exposed to diluted oils at concentrations previously characterized by several judges as "feeling well"; however, no measured doses or concentrations are available. Sedative properties were evaluated based on performance in an Uchida-Kraeplin mental work test, in a physical exercise test and in a listening/environmental sound test and based on conventional forehead surface electroencephalography (EEG). ... Inhalation of RS-linalool during hearing environmental sounds caused "favorable" impressions with 6/13 impressions significantly more positive. The sensory evaluation spectrum of R-linalool was quite similar to thr RS-from, while S-linalool produced less favorable impressions

and in particular had more ratings on the negative side. ... In the EEG studies, 3/5 cases for R-linalool and 4/6 cases for RS-linalool showed a tendency of decreasing beta waves (= sedation), while an opposing tendency of increase was noted in 3/5 cases for S-linalool. ... RS-linalool was interpreted to elicit a favorable impression after hearing environmental sound , accompanied by a decrease in beta waves, due to the R-linalool component, while the S-form tended to produce unfavorable impressions along with an increase in beta waves.
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.139 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Human Toxicity Excerpts :
/CASE REPORTS/ The aim of this study is to find out the causes of skin diseases in one-third of the staff of a perfume factory, in which 10 different perfume sprays were being manufactured. Site inspection, dermatological examination and patch testing of all 26 persons at risk with 4 perfume oils and 30 ingredients of them. The results showed 6 bottlers were found suffering from allergic contact dermatitis, 2 from irritant contact dermatitis, 12 workers showed different strong reactions to various fragrances. The main causes of allergic contact dermatitis were 2 perfume oils (12 cases) and their ingredients geraniol (12 cases), benzaldehyde(9), cinnamic aldehyde (6), linalool, neroli oil, terpenes of lemon oil and orange oil (4 each). Nobody was tested positive to balsam of Peru. Job changes for office workers, packers or printers to other rooms, where they had no longer contact with fragrances, led to a settling. To conclude, automation and replacement of glass bottles by cartridges from non-fragile materials and using gloves may minimize the risk.
[Schubert HJ; Contact Dermatitis 55 (2): 81-3 (2006)] **PEER REVIEWED** PubMed Abstract

Non-Human Toxicity Excerpts :
/LABORATORY ANIMALS: Chronic Exposure or Carcinogenicity/ ... For tests with linalool, 4 groups of 15 A/He mice each were used, one group each of 15 males and 15 females for the high and for the low dose. ... All /ip/ injections of linalool were administered as 0.1 mL/dose of solutions in tricaprylin ... 3 times per week for 8 weeks ... . The experiments were terminated 24 weeks after the first injection. ... The following incidences of pulmonary tumours was found: 1) total dose 3 g/kg bw, males, 9 survivors, 2 with 1 tumor; 2) total dose 3 g/kg bw, females, 11 survivors, 3 with 1 tumor; 3) total dose 0.6 g/kg bw, males, 11 survivors, 1 with 1 tumor; 4) total dose 0.6 g/kg bw, females, 9 survivors, 1 with 1 tumor. These incidences were not statistically different from vehicle controls, $P > 0.05$.
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.127 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Non-Human Toxicity Excerpts :
/LABORATORY ANIMALS: Neurotoxicity/ After a 1 hour inhalation of 27 mg linalool, a decrease in mobility was observed in /**6**-8 wk/ mice (68% 30 min after exposure and 100% 60 min after exposure) and in **6** month mice (4% 30 min after exposure and 29% 60 min after exposure). Plasma levels of linalool 30, 60 and 90 min after exposure: about 1, 2.7 and 2.9 ng/mL.
[European Chemicals Bureau; IUCLID Dataset, Linalool (78-70-6) p.46 (2000 CD-ROM edition). Available from, as of July 16, 2008: http://ecb.jrc.ec.europa.eu/esis/ **PEER REVIEWED**

Metabolism/Metabolites :
... Hydrolysis occurs more rapidly at the low pH of gastric fluids. The reaction products are linalool and acetic acid (ester hydrolysis). This is supported by the findings of the hydrolysis study ... at pH 4, 7 and 9. Therefore it is expected that linalool is the substance that will enter the systemic circulation after oral uptake of linalyl acetate. Linalool is probably converted to geraniol and its metabolites, 1,5-dimethyl-hexadiene-1,**6**-dicarboxylic acid and 7-carboxy-5-methylocto-**6**-enoic acid ... /linalool acetate/
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALYL ACETATE (115-95-7) p.10 (March 2002). Available from, as of July 14, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Synonyms :
3,7-Dimethyl-1,**6**-octadiene-3-ol
PEER REVIEWED

Synonyms :
3,7-Dimethyl-1,**6**-octadien-3-ol
PEER REVIEWED

Synonyms :
3,7-DIMETHYLOCTA-1,**6**-DIEN-3-OL
PEER REVIEWED

Synonyms :
1,**6**-OCTADIEN-3-OL, 3,7-DIMETHYL-
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U. S. Production :
1,**6**-Octadien-3-ol, 3,7-dimethyl- is listed as a High Production Volume (HPV) chemical (65FR81686). Chemicals listed as HPV were produced in or imported into the U.S. in >1

million pounds in 1990 and/or 1994. The HPV list is based on the 1990 Inventory Update Rule. (IUR) (40 CFR part 710 subpart B; 51FR21438).
[EPA/Office of Pollution Prevention and Toxics; High Production Volume (HPV) Challenge Program. Available from the Database Query page at: http://www.epa.gov/hpv/pubs/general/opptsrch.htm on 1,6-Octadien-3-ol, 3,7-dimethyl- (78-70-6) as of July 9, 2008] **PEER REVIEWED**

Human Toxicity Excerpts :
/HUMAN EXPOSURE STUDIES/ 76 patients out of 1781 patch-tested were determined to have cosmetic allergy. In 3 instances, linalool was identified to be the causative allergen with certainty or high probability. Linalool was present in one case each as an ingredient of dry shampoo, hair lotion and after shave. ... /It was concluded/ that fragrances and fragrance chemicals were responsible for the majority of reactions (45.1%). In most cases (23 out of 37 fragrances) the individual fragrance components were not determined, but when they were, the most frequent causes were hydroxycitronellal (**6**/37) and linalool (3/37).
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.114 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Non-Human Toxicity Excerpts :
/LABORATORY ANIMALS: Acute Exposure/ Rats /were admin linalool by/ gavage for 3 days at 600 mg/kg/day. ... An increase in the level of cytochrome P450 within liver microsomes was observed, although the level had returned to normal **6** days after the last treatment.
[European Chemicals Bureau; IUCLID Dataset, Linalool (78-70-6) p.36 (2000 CD-ROM edition). Available from, as of July 16, 2008: http://ecb.jrc.ec.europa.eu/esis/ **PEER REVIEWED**

Non-Human Toxicity Excerpts :
/LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ Oral administration of Asian plantain (Plantago asiatica) essential oil (PAEO) for 3 weeks in C57BL/**6** mice significantly reduced plasma total cholesterol and triacylglycerol (TAG) concentrations by 29 and 46%, respectively. The mRNA (+58%; $P < 0.05$), but not protein, levels of the LDL receptor were significantly higher, whereas both mRNA and protein levels of HMG-CoA reductase were significantly lower (-46 and -11%, respectively; $P < 0.05$) in the liver of PAEO-fed than of control mice. /Although/ the mRNA levels of CYP7A1 were marginally reduced in HepG2 cells, /they were/ ... not in mouse liver after PAEO treatment. Thus, PAEO may have hypocholesterolemic effects by altering the expression of HMG-CoA reductase. Reduced TAG and oxidized LDL may provide additional cardiovascular protective benefits.
[Chung MJ; Br J Nutr 99 (1): 67-75 (2008)] **PEER REVIEWED** PubMed Abstract

Non-Human Toxicity Excerpts :

/IMMUNOTOXICITY/ ... The ability of linalool, a common fragrance ingredient, to cause /skin sensitization/... was quantified using the local lymph node assay before and after careful purification by vacuum distillation. The commercially available grade of linalool (97% purity) was shown to be a weak skin sensitizer. Various impurities, including linalool oxide, dihydrolinalool, epoxylinalool, 3-hexenyl butyrate and 3,7-dimethyl-1,7-octadiene-3,**6**-diol were identified and were completely removed (except for the dihydrolinalool remaining at 1.4%) and the re-purified linalool retested. Neither linalool or dihydrolinalool are protein-reactive compounds. The sensitization potency of the re-purified linalool sample was considerably reduced, but not entirely eliminated, suggesting either that an allergenic impurity could be very quickly reformed by mechanisms of activation or that certain potent undetectable allergens remained.
[Basketter DA et al; Contact Dermatitis 47 (3): 161-4 (2002)] **PEER REVIEWED** PubMed Abstract

Ecotoxicity Values :

LC50 Leuciscus idus (Golden orfe, average length **6**.0 (5.5-7.1) cm, weight 1.8 (1.2-2.8) g) 22-46 mg/L/96 hr; Conditions: static, 21 deg C. /97.7% purity/
[Organization for Economic Cooperation and Development; Screening Information Data Set for LINALOOL (78-70-6) p.79 (March 2002). Available from, as of July 15, 2008: http://www.chem.unep.ch/irptc/sids/OECDSIDS/sidspub.html **PEER REVIEWED**

Environmental Fate :

TERRESTRIAL FATE: Based on a classification scheme(1), an estimated Koc value of 76(SRC), determined from a water solubility of 1.59X10+3 mg/L(2) and a regression-derived equation(3), indicates that linalool is expected to have high mobility in soil(SRC). Volatilization of linalool from moist soil surfaces is expected to be an important fate process(SRC) given a Henry's Law constant of 2.15X10-5 atm-cu m/mole(4). Linalool is not expected to volatilize from dry soil surfaces(SRC) based upon a vapor pressure of 0.16 mm Hg(5). In aqueous biodegradation screening tests, linalool reached 90% of its theoretical biological oxygen demand after 28 days(**6**), suggesting that biodegradation in soil is an important fate process(SRC).
[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Yalkowsky SH, He Y; Handbook of Aqueous Solubility Data. CRC Press LLC, Boca Raton, FL. p. 704 (2003) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 4-9 (1990) (4) Altschuh J et al; Chemosphere 39: 1871-87 (1999) (5) Li J, Perdue EM; Physicochemical Properties of Selected Monoterpines. Preprints of Papers Presented at the 209th ACS National Meeting; Anaheim, CA; April 2-7 (1995) 35: 134-7 (1995) (6) NITE; Chemical Risk Information Platform (CHRIP). Biodegradation and Bioconcentration. Ver 2006.01.30 Updated. National Institute of Technology and Evaluation. Tokyo, Japan. 3,7-Dimethyl-1,6-octadien-3-ol. 78-70-6. Available from the database query page at http://www.safe.nite.go.jp/english/kizon/KIZON_start_hazkizon.html as of June 13, 2008.] **PEER REVIEWED**

Environmental Fate :
AQUATIC FATE: Based on a classification scheme(1), an estimated Koc value of 76(SRC), determined from a water solubility of 1.59X10+3 mg/L(2) and a regression-derived equation(3), indicates that linalool is not expected to adsorb to suspended solids and sediment(SRC). Volatilization from water surfaces is expected(3) based upon a Henry's Law constant of 2.15X10-5 atm-cu m/mole(4). Using this Henry's Law constant and an estimation method(3), volatilization half-lives for a model river and model lake are 54 hours and 20 days, respectively(SRC). According to a classification scheme(**6**), an estimated BCF of 39(SRC), determined from a log Kow of 2.97(7) and a regression-derived equation(8), suggests the potential for bioconcentration in aquatic organisms is low(SRC). In aqueous biodegradation screening tests, linalool reached 90% of its theoretical biological oxygen demand after 28 days(9), suggesting that biodegradation in water is an important fate process(SRC).
[(1) Swann RL et al; Res Rev 85: 17-28 (1983) (2) Yalkowsky SH, He Y; Handbook of Aqueous Solubility Data. CRC Press LLC, Boca Raton, FL. p. 704 (2003) (3) Lyman WJ et al; Handbook of Chemical Property Estimation Methods. Washington, DC: Amer Chem Soc pp. 4-9, 15-1 to 15-29 (1990) (4) Altschuh J et al; Chemosphere 39: 1871-87 (1999) (6) Franke C et al; Chemosphere 29: 1501-14 (1994) (7) Li J, Perdue EM; Physicochemical Properties of Selected Monoterpines. Preprints of Papers Presented at the 209th ACS National Meeting; Anaheim, CA; April 2-7 (1995) 35:134-7 (1995) (8) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999) (9) NITE; Chemical Risk Information Platform (CHRIP). Biodegradation and Bioconcentration. Ver 2006.01.30 Updated. National Institute of Technology and Evaluation. Tokyo, Japan. 3,7-Dimethyl-1,6-octadien-3-ol. 78-70-6. Available from the database query page at http://www.safe.nite.go.jp/english/kizon/KIZON_start_hazkizon.html as of June 13, 2008.] **PEER REVIEWED**

Food Survey Values :
Linalool has been detected as a volatile components of pineapple guava (2.67 ug/g)(1), in three different varieties of nectarines (<10 ppb, 10 ug/kg, and 500 ug/kg)(2,9), in edible Korean chamchwi(3), in apricots (671, 365, and 150 ug/kg)(4), in plums (18 and 8 ug/kg)(4), Harvester peaches(5), orange essences(**6**), unpasteurized orange juices(7), chicken(8), Kogyoku apple juice(10).
[(1) Binder RG, Flath RA; J Agric Food Chem 37: 734-6 (1988) (2) Engel KH et al; J Agric Food Chem 36: 549-53 (1988) (3) Chung TY et al; J Agric Food Chem 41: 1693-7 (1993) (4) Gomez E et al; J Agric Food Chem 41: 1669-76 (1993) (5) Meredith FI et al; J Agric Food Chem 37: 1210-1214 (1989) (6) Moshomonas MG, Shaw PE; J Agric Food Chem 38: 2181-4 (1990) (7) Moshomonas MG, Shaw PE; J Agric Food Chem 42: 1525-8 (1994) (8) Shahidi F et al; CRC Crit Rev Food Sci Nature 24: 141-243 (1986) (9) Takeoka GR et al; J Agric Food Chem 36: 553-60 (1988) (10) Yajima I et al; Agric Biol Chem 48: 849-55 (1984)] **PEER REVIEWED**

FDA Requirements :
Synthetic flavoring substances and adjuvants /for human consumption/ that are generally

recognized as safe for their intended use, withn the meaning of section 409 of the Act. 3,7-Dimethyl-1,6-octadien-3-ol is included on this list.
[21 CFR 182.60 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of July 8, 2008: http://www.gpoaccess.gov/ecfr **PEER REVIEWED**

FDA Requirements :
Synthetic flavoring substances and adjuvants /for animal drugs, feeds, and related products/ that are generally recognized as safe for their intended use, within the meaning of section 409 of the Act. 3,7-Dimethyl-1,6-octadien-3-ol is included on this list.
[21 CFR 582.60 (USFDA); U.S. National Archives and Records Administration's Electronic Code of Federal Regulations. Available from, as of July 8, 2008: http://www.gpoaccess.gov/ecfr **PEER REVIEWED**

TSCA Test Submissions :
Linalol (CAS # 78-70-6) was evaluated for acute intraperitoneal toxicity. The test substance was administered to CD1 mice (4/sex/solution) at 5 dose levels. The LD50 is approximately 1.2 g/kg (oily solution) and 0.2 g/kg (CMC-Tween). Toxic effects include hypermotility with ataxia; sedation or depression following the doses; and dyspnea before death. Mice died more quickly when administered in oily solution (during the first 6 hours) than when administered in CMC-Tween (mortality spread over next 6 days).
[RHONE-POULENC INC; Initial Submission: Letter from Rhone-Poulenc Inc to USEPA Submitting Information on the Enclosed Acute Toxicity and Local Tolerance Report with Linalol and Dehydrolinalol W-Attachments; 09/11/92; EPA No. 88-920006656; Fiche No. OTS0543729] **UNREVIEWED**

TSCA Test Submissions :
Linalol (CAS # 78-70-6) was evaluated for primary dermal irritation. The test substance was applied (0.5 ml) to the occluded-shaved skin of 6 New Zealand white rabbits per concentration at 100%; 30%; 10%; or 3% for 24 hours. The test substance was slightly irritating at 100% and 30%; and no irritation was noted at 10% and 3%.
[RHONE-POULENC INC; Initial Submission: Letter from Rhone-Poulenc Inc to USEPA Submitting Information on the Enclosed Acute Toxicity and Local Tolerance Report with Linalol and Dehydrolinalol W-Attachments; 09/11/92; EPA No. 88-920006656; Fiche No. OTS0543729] **UNREVIEWED**

TSCA Test Submissions :
Linalol (CAS # 78-70-6) was evaluated for primary eye irritation. The test substance was applied (0.1 ml) to the conjunctive sac of 6 New Zealand white rabbits per concentration at 100%; 30%; 10%; or 3%. Irritation was moderate at 100%, slightly at 30%; very slightly at 10%; and no irritation at 3%.
[RHONE-POULENC INC; Initial Submission: Letter from Rhone-Poulenc Inc to USEPA Submitting Information on the Enclosed Acute Toxicity and Local Tolerance Report with Linalol and Dehydrolinalol W-Attachments; 09/11/92; EPA No. 88-920006656; Fiche No. OTS0543729] **UNREVIEWED**

TSCA Test Submissions :
Linalol (CAS # 78-70-6) was evaluated for acute oral toxicity. The test substance was

administered to CD1 mice (4/sex/solution) at 5 dose levels. The LD50 is approximately 3.5 g/kg (oily solution) and 1.7 (aqueous 10% arabic gum solution). Toxic effects included hypermotility with ataxia; sedation or depression following the doses; and dyspnea before death. Mortality occurred in the first 24 hours, regardless of vehicle used.
[RHONE-POULENC INC; Initial Submission: Letter from Rhone-Poulenc Inc to USEPA Submitting Information on the Enclosed Acute Toxicity and Local Tolerance Report with Linalol and Dehydrolinalol W-Attachments; 09/11/92; EPA No. 88-920006656; Fiche No. OTS0543729] **UNREVIEWED**

Emergency Medical Treatment :

EMT Copyright Disclaimer:

The following Overview, *** LINALOOL ***, is relevant for this HSDB record chemical.

Life Support:

- This overview assumes that basic life support measures have been instituted.

Clinical Effects:

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0.2.1 SUMMARY OF EXPOSURE
 0.2.1.1 ACUTE EXPOSURE
   A)  Linalool is a volatile oil with low oral and dermal
       toxicity. The expected primary effects are CNS and
       respiratory depression and mild dermatitis.
       Non-allergic, toxic reactions are unlikely unless there
       is exposure to the pure compound. Almost all data are
       from animal experimentation.
0.2.5 CARDIOVASCULAR
 0.2.5.1 ACUTE EXPOSURE
   A)  Vasodilation and a rapid decrease in arterial blood
       pressure occurred in animals administered linalool IV.
0.2.6 RESPIRATORY
 0.2.6.1 ACUTE EXPOSURE
   A)  Respiratory depression occurred in poisoned animals.
0.2.7 NEUROLOGIC
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0.2.7.1 ACUTE EXPOSURE
A) Narcosis and ataxia occurred in poisoned animals.
0.2.14 DERMATOLOGIC
0.2.14.1 ACUTE EXPOSURE
A) Psoriasis and contact allergy occurred in a man who used linalool in an aftershave.
B) Irritation and sensitization occurred in test animals.
0.2.21 CARCINOGENICITY
0.2.21.1 IARC CATEGORY
A) IARC Carcinogenicity Ratings for CAS78-70-6 (IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2006; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2007; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2010; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2010a; IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2008; IARC, 2004):
1) Not Listed

Laboratory:

A) No toxic reactions requiring blood tests have been documented.

Treatment Overview:

0.4.2 ORAL EXPOSURE
A) Gastric decontamination is not likely to be necessary unless greater than 1 g/kg is ingested. This is based on animal LD50 data.
B) ACTIVATED CHARCOAL: Administer charcoal as a slurry (240 mL water/30 g charcoal). Usual dose: 25 to 100 g in adults/adolescents, 25 to 50 g in children (1 to 12 years), and 1 g/kg in infants less than 1 year old.
0.4.4 EYE EXPOSURE
A) DECONTAMINATION: Irrigate exposed eyes with copious amounts of room temperature water for at least 15 minutes. If irritation, pain, swelling, lacrimation, or photophobia persist, the patient should be seen in a health care facility.
0.4.5 DERMAL EXPOSURE
A) OVERVIEW
1) DECONTAMINATION: Remove contaminated clothing and wash exposed area thoroughly with soap and water. A physician may need to examine the area if irritation or pain persists.

Range of Toxicity:

A) A toxic dose has not been established for man and a human ingestion case could not be found.
B) Based on animal data, serious toxicity should not occur until greater than 1 g/kg has been ingested. This is an estimate only.

[Rumack BH POISINDEX(R) Information System Micromedex, Inc., Englewood, CO, 2011; CCIS Volume 148, edition expires Aug, 2011. Hall AH & Rumack BH (Eds): TOMES(R) Information System Micromedex, Inc., Englewood, CO, 2011; CCIS Volume 148, edition expires Aug, 2011.] **PEER REVIEWED**